CLAIMS

1. A communication apparatus performing periodical communications with another communication apparatus via a transmission line, comprising:

a communication control portion operable to set a communication period to (L×m/n) (L is a variation cycle of characteristics of a transmission line, n is an integer that is 2 or larger, and m is an integer that is n or larger and whose greatest common measure with n is 1) to perform communications,

a transmission line estimation portion operable to estimate the characteristics of the transmission line within a time (L/n) after a certain offset time has passed since the communication period started, and

a communication parameter determination portion operable to determine a communication parameter to be used by the communication control portion, based on a result of estimation by the transmission line estimation portion.

2. The communication apparatus according to claim 1, wherein the offset time is (L×k/n) (k is a real number that satisfies 0≤k<m).

3. The communication apparatus according to claim 1, wherein the transmission line estimation portion estimates

the characteristics of the transmission line at least n times.

4. The communication apparatus according to claim 1, wherein the characteristics of the transmission line are estimated at an initial starting up or upon detecting a change in a state of the transmission line.

5. The communication apparatus according to claim 1, wherein the communication period is a period of beacons sent from a communication apparatus serving as a master unit.

6. The communication apparatus according to claim 5, wherein a request to allocate a time for estimating the characteristics of the transmission line is sent to the communication apparatus serving as the master unit.

7. The communication apparatus according to claim 6, wherein allocation of a time for estimating the characteristics of the transmission line is notified using a beacon frame or a polling frame to another communication apparatus, and the characteristics of the transmission line are estimated only when permission is given.

8. The communication apparatus according to claim 1, wherein the variation cycle L of the characteristics of the

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transmission line is a half cycle of a commercial power supply cycle.

9. A transmission line estimation method executed by a
communication apparatus performing periodical communications
with another communication apparatus via a transmission line,
comprising:

setting a communication period to (L×m/n) (L is a variation
cycle of characteristics of a transmission line, n is an integer
that is 2 or larger, and m is an integer that is n or larger and
whose greatest common measure with n is 1) to perform
communications,

estimating the characteristics of the transmission line
within a time (L/n) after a certain offset time has passed since
the communication period started, and

determining a communication parameter to be used in the
communicating step, based on a result of estimation in the
estimating step.

10. An integrated circuit used for a communication
apparatus performing periodical communications with another
communication apparatus via a transmission line,

wherein circuits are integrated that function as:

a communication control portion operable to set a
communication period to (L×m/n) (L is a variation cycle of

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characteristics of a transmission line, n is an integer that is 2 or larger, and m is an integer that is n or larger and whose greatest common measure with n is 1) to perform communications,

a transmission line estimation portion operable to estimate the characteristics of the transmission line within a time (L/n) after a certain offset time has passed since the communication period started, and

a communication parameter determination portion operable to determine a communication parameter to be used by the communication control portion, based on a result of estimation by the transmission line estimation portion.